Management Recommendations and Mitigation

Avoidance and Protection Measures Common to All Species

Avoidance and protection measures included below are hereby incorporated into the plan to ensure implementation of the proposed action does not result in adverse affects to listed or other special status species.

The following hierarchy would be employed to avoid, minimize or compensate for adverse effects to rare, threatened and endangered species.

- Avoid adverse effects to rare, threatened and endangered species when practicable.
- Minimize adverse effects to rare, threatened and endangered species when practicable.
- Mitigate/compensate for adverse effects on rare, threatened and endangered species when practicable.

Additional compliance, documentation, studies and consultation would be conducted as appropriate prior to implementation of specific actions.

- Conduct surveys for rare, threatened, and endangered species as warranted.
- To the extent practicable, site and design facilities/actions to avoid adverse affects to rare, threatened, and endangered species (including sensitive wildlife habitats or habitat features, especially during breeding seasons). If avoidance is infeasible, minimize and compensate adverse affects to rare, threatened, and endangered species as appropriate and in consultation with the appropriate resource agencies.
- Develop and implement restoration and/or monitoring plans as warranted. Plans should include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques.

- Implement stormwater management measures to reduce nonpoint-source pollution discharge from roads, parking lots, and other impervious surfaces. This could include oil/sediment separators, street-sweeping, infiltration beds, and use of permeable surfaces and vegetated or natural filters to trap or filter stormwater runoff.
- Use only plants native to Yosemite National Park in landscaping. Existing *annosus* centers in developed areas could be mitigated by landscaping with species that are not susceptible to infection, such as California black oak, live oak, and big-leaf maple.
- Continue to implement noxious weed abatement measures. This could include restoration of degraded habitats, use of hand labor to remove weeds, and use of herbicides.
- Implement measures to reduce bear/human encounters. Measures could include visitor education on bear behavior, installation of bear-proof containers at campsites, parking lots and other facilities as warranted, enforcement of existing park regulations, regular trash collection, and removal of apples from historic orchards.
- Implement measures to reduce adverse effects of exotic wildlife. This could include use of processed feeds and hay at stables to reduce food for cowbirds, trapping programs for cowbirds, and measures to eradicate bullfrogs from wetland habitats.
- Minimize night lighting where practicable. Where night lighting is necessary, design lighting to be minimal, directed downward and shielded.
- Educate the public on the dangers of intentional or unintentional feeding of park wildlife, and on inadvertent harassment through observation or pursuit.
- Implement the Restricted Access Plan when traffic and parking conditions in Yosemite Valley are over congested.
- Implement standard noise abatement measures during park operations. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts to adjacent noise-sensitive uses, use of the best available noise control techniques wherever feasible, use of hydraulically or electrically powered impact tools when feasible, and location of stationary noise sources as far from sensitive uses as possible.
- Implement fencing measures as warranted to protect sensitive habitats.
- To the extent practicable, site and design facilities to minimize objectionable noise elements.
- There are several habitat criteria that are common the riverine systems to be managed under this plan, and to most of the species assessed. They are expressed below as requirements for reaching a “no effect” or a “not likely to adversely affect” determination for indirect effects.
- Maintain or restore the presence of very large, old trees, snags, large diameter logs, and decaying wood across the landscape.
- Maintain conditions suitable for spotted owl prey base, including decadence features such as mistletoe brooms, cavities, tree deformities, fungus growth, and large, decadent oaks.

- Maintain and restore shading and desired water temperatures, water quality, root strength, input of large woody debris, and input of organic matter (including leaf litter) in riparian and aquatic areas.
- Maintain and restore functioning wet meadows within or adjacent to late-successional forests.
- Maintain and restore watershed and hydrologic processes, including the role of mountain meadows.
- Maintain and restore riparian and aquatic vegetation structure and function.
- Maintain and restore connectivity of aquatic and riparian habitats.
- Maintain areas where species sensitive to human activity can successfully breed or feed without harassment.
- Implement adaptive management strategies as appropriate.

Sustainable Design and Aesthetics

All development within the park should minimize effects to rare, threatened and endangered species to the extent practicable. Buildings and site elements should be designed to work in harmony with the surroundings. Design guidelines should be generated for all new or altered facilities. Facilities should incorporate principles of sustainability in order to minimize long-term effects on rare, threatened and endangered species of the park and the planet. Appropriate strategies should be implemented to reduce, recycle, or reuse resources. Wherever possible, these strategies should be interpreted to encourage responsible stewardship of the environment.

Best Management Practices

The following best management practices would be implemented, as appropriate, prior to, during, and/or after specific construction (for the purposes of this discussion, construction includes major repair and/or rehabilitation, demolition, deconstruction, reconstruction, restoration, etc.). Specific tasks would include, but are not limited to, the following:

- Implement a compliance-monitoring program in order to stay within the parameters of Federal Endangered Species Act, National Environmental Policy Act and U.S. Army Corps of Engineers Section 404 permits, etc. The compliance-monitoring program would oversee these mitigation measures and would include reporting protocols.
- Implement a natural resource protection program. Standard measures could include construction scheduling, biological monitoring, erosion and sediment control, use of fencing or other means to protect sensitive resources adjacent to construction, removal of all food-related items or rubbish to bear-proof containers, topsoil salvage, and revegetation. This could include specific construction monitoring by resource specialists as well as treatment and reporting procedures.

- Implement a fencing and flagging program to protect rare, threatened and endangered species or sensitive habitats. This could include the following types of measures: use of high visibility snow fence about protected elderberry shrubs, marking trees to be retained, use of signs (e.g., no refueling signs) in areas of high sensitivity.
- Implement a native vegetation salvage program. This could include minimizing land disturbance, salvage and storage of topsoil, treatment of non-native exotics, erosion control, and revegetation.
- Comply with the *Vegetation Management Plan* for landscaping and yard care within and around developed areas, including minimization of irrigation systems and planting with native species.
- Implement a dust abatement program. Standard dust abatement measures could include the following elements: water or otherwise stabilize soils, cover haul trucks, employ speed limits on unpaved roads, minimize vegetation clearing, and revegetate post construction.
- Implement standard noise abatement measures during construction. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts to adjacent noise-sensitive uses, use of the best available noise control techniques wherever feasible, use of hydraulically or electrically powered impact tools when feasible, and location of stationary noise sources as far from sensitive uses as possible.
- Implement a noxious weed abatement program. Standard measures could include the following elements: ensure construction related equipment arrives on-site free of mud or seed bearing material, certify all seeds and straw material as weed free, identify areas of noxious weeds pre-construction, treat noxious weeds or noxious weed topsoil prior to construction (e.g., topsoil segregation, storage, herbicide treatment), and revegetate with appropriate native species.
- Implement a spill prevention and pollution control program (hazardous materials). Standard measures could include hazardous materials storage and handling procedures, spill containment, clean-up, and reporting procedures, and limitation of refueling and other hazardous activities to upland / non-sensitive sites.
- Implement an interpretation and education program. Continue signage and education programs to promote understanding among park visitors.
- Implement a tree protection plan as warranted. This could include measures such as avoidance of the root-zone (typically 1.5 times the tree canopy), use of hand equipment for trenching within the root-zone, reduce compaction within root-zones, maintain a natural grade.
- Delineate wetlands and apply protection measures during construction. Wetlands would be delineated by qualified National Park Service staff or certified wetland specialists and clearly marked prior to construction work. Construction activities should be performed in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.

Species-Specific Avoidance and Protection Measures

The following avoidance and protection measures are included to guide future actions and planning within the Merced River corridor. These measures are based on current scientific protocols and agency recommendations. These measures are intended to be fluid and change with increased knowledge about a particular species or suite of species or as new technologies become available and practicable.

Valley Elderberry Longhorn Beetle

- All NPS personnel that coordinate construction work in the gorge and El Portal should be familiar with locations and avoidance requirements for all elderberry shrubs within the construction zone.
- The contractor and all of the contractor's on-site personnel should be briefed on the locations of elderberry, avoidance requirements, and penalties for noncompliance.
- Elderberry plants within the project area should be individually fences 20 feet from the dripline. The area would be signed before clearing and grubbing begins and before any large equipment is allowed to access to the site.
- A qualified NPS staff member should be present for the duration of the project to ensure no unnecessary take of elderberry occurs. The staff member would have the authority to stop all construction activities should the potential for unnecessary take become apparent. He or she should report any violations to USFWS.
- Any construction-related disturbance to the buffer zone (100-feet from the dripline) should be minimized and restored following construction.

Special Status Birds

- To avoid conflicts with nesting birds, construction activities within nesting habitat could occur outside the breeding season (typically is March to August).
- Trees or structures with unoccupied nests (stick nests or cavities) should be removed prior to March 1, or following the nesting season.
- Alternatively, if activities take place during the breeding season, a qualified biologist would conduct a pre-construction survey for individuals no more than two weeks prior to construction in March through August. If the any special status species is observed nesting, a determination should be made whether or not the proposed action will impact the active nest or disrupt reproductive behavior.
- If it is determined that the action will not impact an active nest or disrupt breeding behavior, construction will proceed without any restriction or mitigation measure.

- If it is determined that construction will impact an active nest or disrupt reproductive behavior then avoidance strategies should be implemented. Construction could be delayed within 500 feet of such a nest until a qualified biologist determines that the subject birds are not nesting or until any juvenile birds are no longer using the nest as their primary day and night roost.

Special Status Aquatic Species

Implementation of the following conservation and protection measures would reduce or eliminate potential taking of special status amphibians and aquatic species. These measures were abstracted from the USFWS Programmatic Biological Opinion for projects that may affect California red-legged frog (USFWS 1999), though the Biological Opinion does not specifically apply to this project because no California red-legged frog take is anticipated. Provisions listed below are considered reasonable and prudent for actions located within 100 feet of aquatic habitats:

- Work activities within potential special status aquatic species habitat should be completed between April 1 and November 1 or during low-flow conditions.
- A qualified biologist should survey the site two weeks before the onset of activities. If special status aquatic species, tadpoles, or eggs are found, the biologist will contact the appropriate agency(ies) to determine if moving any of these life-stages is appropriate.
- A qualified biologist should conduct training sessions for all construction personnel before activities begin.
- The aquatic construction boundary should be fenced to prohibit the movement of frogs into or out of the construction area and to control siltation and disturbance to aquatic habitat
- All construction adjacent to or within aquatic habitats should be regularly monitored.
- All trash that may attract predators should be contained and regularly removed. Following construction, all trash and construction debris will be removed from work areas.
- All fueling and maintenance of vehicles and equipment should occur at least 20 meters (65 feet) from any aquatic habitat.
- The spread or introduction of invasive exotic plant species should be avoided. When practicable, invasive exotic plants in the project areas will be removed.
- The number and size of access routes, staging areas, and total area of activity should be limited to the minimum necessary to achieve the project goal.
- Best management practices should be implemented to control erosion.
- During dewatering, intakes should be completely screened with wire mesh not larger than five millimeters (mm) to prevent aquatic species from entering the pump system. Water would be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow

will be removed in a manner that allows flow to resume with the least disturbance to the substrate.

- Where practicable, qualified biologists would permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrachid fishes, to the maximum extent possible.
- The downstream construction boundary should be fenced to prohibit the movement of aquatic species into the construction area and to control creek siltation and disturbance to downstream riparian habitat. An exclosure fence should be installed in the creek channel both upstream and downstream of construction activities as appropriate. Fences should be installed at least six weeks prior to the commencement of any construction activities.
- Immediately after installation of the exclosure fence, a qualified biologist should inspect all areas within the fence for aquatic species.

Special Status Bats

- A qualified biologist should conduct surveys to determine whether affected structures, mature trees, or other habitat (e.g., crevices) that would be affected by a proposed action, provide hibernacula or nursery colony roosting habitat.
- If surveys conducted during the fall do not reveal any bat species, then the action should occur within three days in order to prevent the destruction of any bats that move into the area after the survey.
- If the site is being used as a winter roost, then the action should occur either prior to (between September 1 and October 1) or after hibernation (January 15 to February 15).
- If spring surveys are conducted and reveal that the site is being used as a nursery colony, the action should not occur until after August 15, when the pups are weaned and are volant.

Other Special Status Mammals

- Excavation sites (trenches or pits) would have suitable ramps to all small mammals to exit these areas.
- A qualified biologist would be available to inspect all excavations before refilling occurs, ensuring that special status species are passively relocated to avoid incidental take.
- Exclosure fencing could be erected prior to construction to ensure that no special status species are within the construction areal.
- Speed limits in primary fisher habitat should be low to prevent accidental injury.